

# SPECIAL EVENTS IMAGER

## FACT SHEET

### NASA/NOAA IMPLEMENTATION PLAN FOR THE SEI INSTRUMENT

#### NASA Principal Investigator

Dr. Wayne E. Esaias - NASA/GSFC

#### Project Managers:

Mr. Jamison Hawkins, NOAA/NESDIS  
TBD - NASA/GSFC Manager  
Proposal Manager, Robert Caffrey, NASA/GSFC

#### Co-Investigators:

Dr. Gene Feldman, Data Processing Manager, NASA/GSFC  
Dr. Charles McClain, Calibration Validation, NASA/GSFC  
Dr. Forrest Hall, Land Processes Lead, NASA/GSFC  
Dr. Arlin Krueger, Applications/Hazards Lead, NASA/GSFC  
Dr. Ernest Hilsenrath, Atmosphere Lead, NASA/GSFC

#### NOAA Principal Investigator

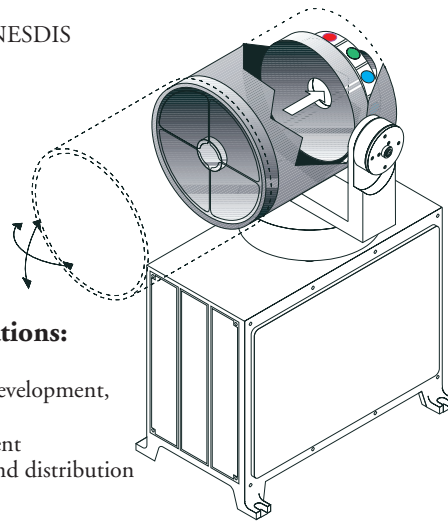
Dr. Christopher W. Brown - NOAA/NESDIS

#### Advisory Committee:

Dr. James Yoder, URI  
Dr. Frank Muller-Karger, USF  
Dr. Janet Campbell, UNH  
Dr. Curtiss Davis, NRL  
Dr. Robert Arnone, NRL  
Dr. John Brock, USGS  
Dr. Rick Stumpf, NOAA/NOS

#### Mission Team Member Organizations:

MIT/LL - SEI Instrument developer  
NASA/GSFC - Mission and sensor development, validation  
SAIC/GSC - Data System development  
NOAA/NESDIS - Data processing and distribution



#### Mission Statement

*Acquire 300m resolution multispectral visible to near infrared (380 - 1000nm) observations from geostationary orbit in order to detect, monitor, quantify, and predict short-term changes for earth science research and application purposes.*

#### Science Objectives

Investigate response of terrestrial and marine ecosystems to climate change.

Document effect of tidal aliasing of data collected by sensors on polar-orbiting platforms.

#### Application Objectives

Monitor natural hazards - floods, volcanos, and toxic algal blooms.

Transition new technologies from NASA for operational use.

**Proposed Data Sets:** High temporal (10-30 minute) and spatial (300m x 300m) resolution earth science data sets for oceans, land, atmospheres, and hazards.

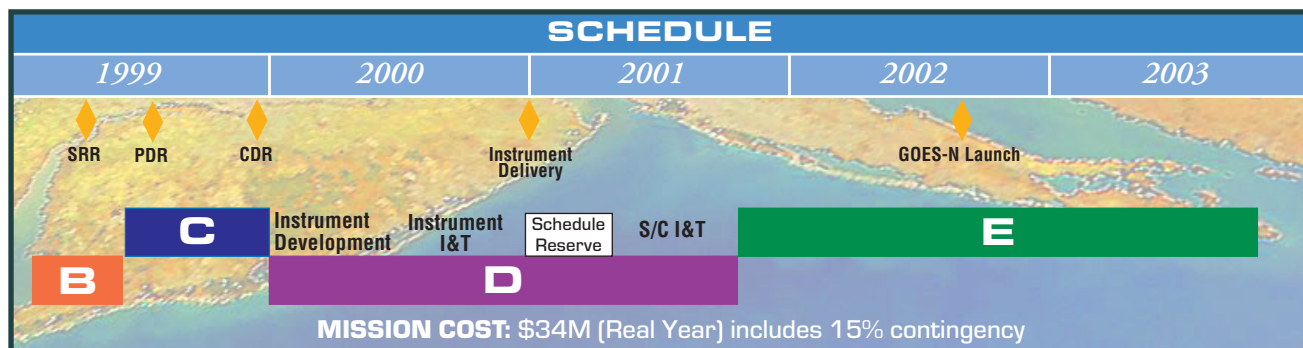
**Proposed Instrumentation:** Visible - near infrared hyperspectral area array imager with filter wheel, and gimbaled telescope. High SNR achieved by temporal integration and averaging.

**Instrument Heritage:** Ocean Color - CZCS, OCTS SeaWiFS; Terrestrial - AVHRR (MODIS, TM).

**Proposed Flight Service:** NOAA GOES

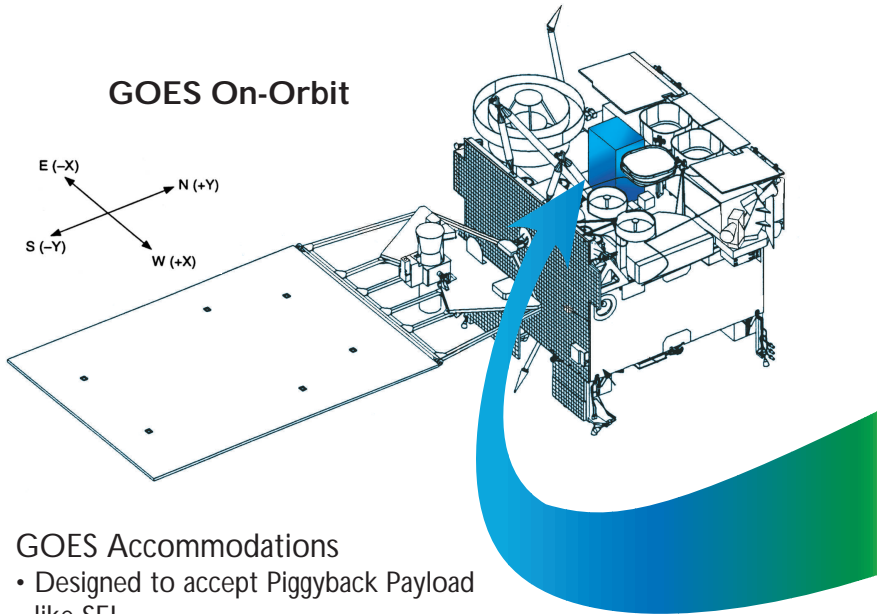
**Minimum Science Mission:** Single mission, one instrument

**Major Milestones:** Launch date- 2002/5, Mission lifetime - 3 year minimum, with options to continue for the life of the sensor.



# SEI is Easily Accommodated on GOES, TDRS or Commercial Missions

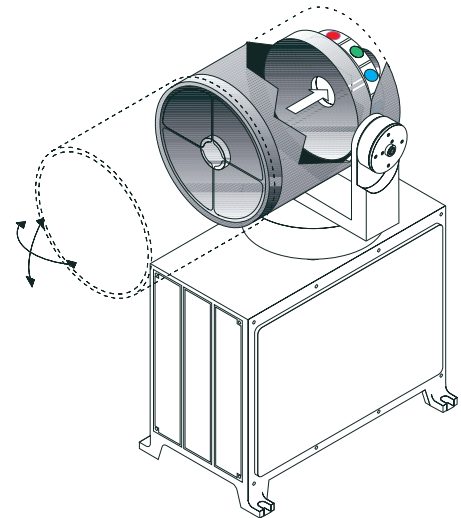
## GOES On-Orbit



## GOES Accommodations

- Designed to accept Piggyback Payload like SEI
- Mass, Power, Thermal and Data available meet SEI needs
- Thermal design is "SEI Ready"
- No Stabilization Mechanism Required

## The SEI Payload



- Supports Self Contained or Integral Thermal Control
- Adaptable Interfaces
- Low Power, Low Mass
- Easily Accommodated
- Modular Design
- Fits within Fairing Envelopes

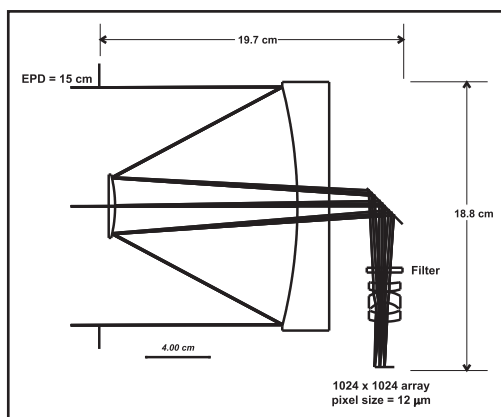
## SEI Characteristics

Item	Value
Field of View	300km x 300km
Spatial Resolution	300 meters
Spectral Coverage	380nm-1000nm
# of spectral bands	Up to 12
Data to Ground	1 band per minute

## SEI Resource Requirements Fit All Flight Option Modes with >25% Mass, Power, and Volume Margin

Resource	SEI Requirement	GOES Available
Mass	25 Kg	35Kg
Power	60 Watts	100 Watts, Fused
Volume	72,000 cc (30 x 40 x 60 cm)	140,000 cc
On/Off Control	S/C Relay Driver	Relay Driver
Telemetry	Flexible	S Band
Command	Flexible	S Band
Science Data Rate	100Kbps	S Band
Timing/Clock	MIL-STD-1553	MIL-STD-1553
Mechanical	Flexible	Optical Bench

## SEI Prototype Design Concept



## Geophysical Products

- Ocean chlorophyll concentration
- Suspended sediment concentration
- Water clarity/visibility
- Detect & identify Algal blooms
- Coastal currents (feature tracking)
- NDVI
- Clouds
- Aerosols

## Capabilities and Information in Visible and Near-IR Bands

